F 5070 (Pages : 3) Reg. No.....

Name.....

M.Sc. DEGREE (C.S.S.) EXAMINATION, JANUARY 2016

Third Semester

Faculty of Science

Branch III : Chemistry

AN 3C 10/CH 3C 10—ORGANIC SYNTHESES

(Common to Analytical Chemistry and Chemistry)

[2012 Admission onwards]

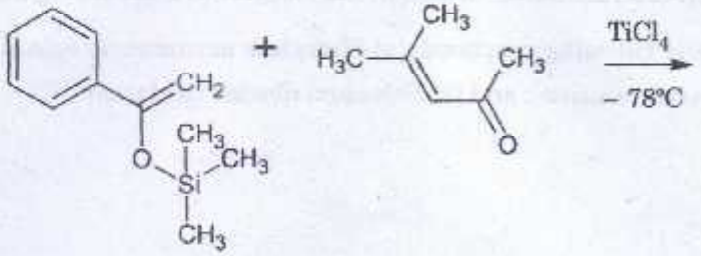
Time : Three Hours Maximum Weight : 30

Section A

Answer **ten** *questions.*
Each question carries a weight of 1.

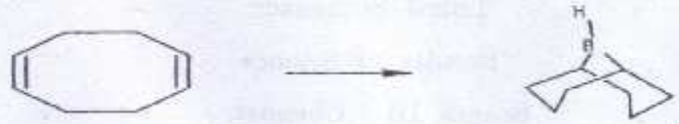
1. What is Wilkinson catalyst ? What is its use ? What is its special advantage over usual hydrogenation catalysts like Pt. Pd, Ni etc. ?
2. Explain the terms biogenesis, biosynthesis and biomimetic synthesis.
3. Name three common amino protecting groups used in peptide synthesis.
4. What are the important uses of : (1) DCC ; (2) NBS.
5. Describe 'Wacker oxidation' ? What is its industrial application ?
6. What are oxetanes ? How they are produced photochemically ?
7. Give *one* example each for. Demyanov ring expansion and ring contraction.
8. Predict the products of the following reactions :—

(1) 

(2) 

Turn over

9. Suggest suitable reagents for the following conversions.

(1) 

(2) 

10. What is DIBAL-H ? What is the special advantage in using DIBAL-H over $LiAlH_4$.

11. What are the advantages of Osmium tetroxide compared to $KMnO_4$ in hydroxylation of alkenes ? What are the disadvantages ?

12. Explain the following reactions using suitable examples. (1) Ritter reaction ; (2) Tishchenko reaction.

13. What is DDQ ? Explain its use the synthesis of aromatic compounds using suitable examples.

(10 × 1 = 10)

Section B

Answer any **five** *questions.*
Each question carries weight 2.

14. Give three different methods for synthesizing four membered carbocyclic compounds.

15. Explain with examples (a) Acyloin condensation ; (b) Meerwein-Ponndort-Verley reduction ; (c) Ullman coupling ; (d) Pauson-Khand reaction.

16. Give the total synthesis of Longifolene.

17. Explain with suitable examples, the important roles played by trimethyl silyl group in modern organic synthesis.

18. Write down the important intermediates formed in the biosynthesis of carbohydrates.

19. Give the mechanism of the following reactions. (a) Sharpless asymmetric epoxidation ; (b) Wood ward modification of Prevost reaction ; and (c) Selenium dioxide oxidation.

20. Explain with examples the following metal mediated coupling (a) Heck reaction ; (b) Stille coupling ; (c) Suzuki coupling ; (d) Sonogashira coupling.

21. What is ozonolysis ? Give the mechanism of the reaction. Show how the reaction is useful in the understanding the carbon frame work of alkenes.

(5 × 2 = 10)

Section C

Answer any **two** *questions.*
Each question carries weight 5.

22. What is solid phase peptide synthesis (SPPS) ? What is the special advantage of it compared to solution phase peptide synthesis ? How the following tetra peptide can be synthesized by SPPS-Ala-Gly-Try-Ala.

23. (a) Give the biomimetic synthesis of Progesterone.

    (b) Write down the Enatioselective synthesis of Corey Lactone.

24. How the following heterocyclic synthesized ? (1) Imidazole ; (2) Thiazole ; (3) Oxazole ; and (4) Thiophene.

25. Write down the important steps in the biosynthesis of cholesterol starting from acetyl coenzyme-A.

(2 × 5 = 10)